

Science in a Bag – Teacher Page

Legos: Weathering, Erosion, and Deposition

Grade Level

4th

Standards

**GLE 0407.7.1** Investigate how the Earth’s geological features change as a result of erosion (weathering and transportation) and deposition.

**0407.7.1** Prepare a demonstration to illustrate how wind and water affect the earth’s surface features.

**SPI 0407.7.1** Design a simple model to illustrate how the wind and movement of water alter the earth’s surface.

Task Objective

TLW investigate how weathering and erosion affects the Earth’s surface by conducting an activity in which they are acting as erosion. TLW identify the terms weathering, erosion, deposition, and other terms associated with the topic as a result of this activity.

Explanation

The Lego activity pertains to weathering and how erosion affects the Earth’s surface. The students are acting out weathering using body movements. They crabwalk across the room to represent erosion. When they place the Lego block on the other side of the room, they are representing deposition.

To conduct the activity correctly, the students must divide into teams and build a landform using Lego blocks. They are to fill in the table on the handout describing the landform before the weathering takes place. Then, they are to act as if some form of weathering has occurred and erosion is beginning when they take a Lego block and crabwalk across the room. The crabwalk represents the erosion in the process. In this step, one student from each group will take one Lego block to the other side of the room and deposit the piece on the other side. They race back to their team to allow the next person to go. When they place the Lego block on the other side of the room, they are displaying deposition. After everyone has taken a turn, they will then finish filling out the table that goes inside their interactive notebooks.

Academic Vocabulary

1. deposition - The dropping off, or setting down, or weathered rock.
2. erosion - The transportation, or movement, of weathered rock.
3. ice - The solid form of water.
4. landform -Natural features on Earth’s surface.
5. precipitation - Any kind of weather condition where something is falling from the

sky.

6) rock - A relatively hard, naturally occurring mineral material.

7) sediment - Smaller particles that are broken down from the Earth’s surface rocks

that are carried away by water and wind.

8) transportation - To move objects from one place to another.

9) weathering - The natural breakdown of rocks.

10) wind - A natural movement of the air.

**Stacks (Vocabulary Activity)**

Stacks can be played by two or more players and requires a sleeve (or two depending on how many words you are using) of dixie cups with your words written on them. Students draw a cup and identify the word. One at a time, a player must then identify the word by either the definition, using it in a sentence, or naming an antonym or synonym. The other players use the deck of word cards to check the first student’s response.

If they are correct they get to stack their cup. If incorrect they put the cup back in the center pile. Play continues through all players with the goal of building the highest stack out of cups.

Rationale: The students will practice using the vocabulary words from the activity. They will have to say the definition, a synonym, an antonym, or use the word in a sentence correctly. The other students are receiving practice as well because they have to read the card to ensure the student’s response is correct.

Common Misconceptions

Students may think that the Earth is consistent and doesn’t change. They may also think that rocks are unchanging and that erosion happens quickly. Students may also think that erosion is always a negative effect. They may also confuse the words weathering and erosion with the same meaning.

Real World Connection

There have been several areas along Interstate-75 North/South that have experienced severe weathering occurrences. In these instances, severe erosion have caused large rock slides to occur and limit access through those areas.

Connections Across the Curriculum

Math - The students will be able to visualize math problems using the Lego blocks. For example, the Lego blocks can show students fractions in visual model. Using two different colors to represent the numerator and the denominator, they just put together that many blocks that represents the numerator and the amount of blocks that represents the denominator. The students could also measure how much the landforms weigh or how far the Lego blocks have traveled.

[CCSS.MATH.CONTENT.4.NF.A.1](http://www.corestandards.org/Math/Content/4/NF/A/1/)

Explain why a fraction *a*/*b* is equivalent to a fraction (*n* × *a*)/(*n* × *b*) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions

Social Studies - The students can create a model using the Lego blocks to display an event that took place in history. They can also build a model from the Lego blocks to retell a story of a historical event.

4.68 Create a visual display using multiple forms of media to name the states and territories. that existed in 1850, their locations, and major geographical features, including mountain ranges, principal rivers, and dominant plant regions. (G)

Writing - Lego blocks can also assist students in writing. The vocabulary words can be placed on the side of the Lego blocks. The students can then use those Lego blocks to write a summary of what happened during the activity by incorporating those vocabulary words into the summary.

[CCSS.ELA-LITERACY.W.4.5](http://www.corestandards.org/ELA-Literacy/W/4/5/)

With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (Editing for conventions should demonstrate command of Language standards 1-3 up to and including grade 4 [here](http://www.corestandards.org/ELA-Literacy/L/4/).)

References

<http://beakersandbumblebees.blogspot.com/search?updated-min=2009-01-01T00:00:00-08:00&updated-max=2010-01-01T00:00:00-08:00&max-results=50>

* Lego Activity (Weathering, Erosion, and Deposition Game)

<http://beyondpenguins.ehe.osu.edu/issue/earths-changing-surface/common-misconceptions-about-weathering-erosion-volcanoes-and-earthquakes>

* Misconceptions about the topic

<http://www.edudemic.com/12-ways-use-lego-classroom/>

* How to use the Lego blocks in different subject areas



Science in a Bag – Student Page

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Task Objective

TLW investigate how weathering and erosion effects the Earth’s surface by conducting an activity in which they are acting as erosion. TLW identify weathering, erosion, deposition, and other terms associated with the topic as a result of this activity.

Materials Needed

Lego blocks (enough for however many teams there are)

Container or bag to hold Lego blocks

Interactive notebooks

Lego Landforms Handout

Pencil

Procedures

1. Divide into two teams
2. Divide the legos between the two teams
3. Build a small landform with the Lego blocks provided. Make sure all of the blocks are connected.
4. In the interactive notebook, complete the first box on the Lego Landforms handout to make observations about the landform you just created
5. Once both teams are finished, each team needs to line up in a straight line next to the table holding the landform (Legos).
6. When both teams are ready, the first person in line will take one Lego from the landform, crabwalk to the other side of the room, and deposit the Lego on the other table.
7. The same person will then run back to their team and tag the next person in line to go next.
8. The next person will do the same as the first person, except when depositing their Lego block they will attach it to the other Lego on the table.
9. Repeat this process until everyone in the group has had one turn.

10) Now, complete the second box on the Lego Landforms handout describing how

the landform has changed.

11) Explain why this change happened and what caused it to happen

12) Then, complete the final box in the handout describing the new landform that was

created.

Academic Vocabulary

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8) transportation - To move objects from one place to another.

9) weathering - The natural breakdown of rocks.

10) wind - A natural movement of the air.

**Stacks Activity**

1. This activity requires two or more players.
2. There are 10 cups with vocabulary words written on the bottom of them. Stack the cups together in the middle of the table or area, upside down.
3. There is also a card deck with the vocabulary words written on one side. Make sure the cards are on the table or area with the vocabulary word facing up.
4. One at a time, a player will pick up a cup from the stack and identify the word by either stating the definition, using it correctly in a sentence, or naming an antonym or synonym.
5. The other players are responsible for making sure that they say the correct answer. They will find the card with the same word that is on the cup and check the player’s response.
6. If the player is correct, they will get to keep their cup.
7. If the player is incorrect, they will have to place the cup at the bottom of the stack.
8. Play will continue until all of the cups are gone from the stack.
9. The goal is to have the most cups or the highest stack of cups.

Assessment

FACT: What Are You Doing and Why? #74

I will randomly stop you where you are in the activity and ask the following questions: what are you doing and why are you doing it. Each of you will write your response down on a piece of paper and pass them to me. This will show me if you are understanding the purpose of the activity. For this particular activity, you should learn about an aspect of Earth science. You will learn terms such as weathering, erosion, deposition, and landform. You should be able to tell me that you are learning what happens to Earth’s surface when erosion occurs and the process that takes place.

Clean-up

1. Make sure to put all of the Lego blocks back into the bag
2. Stack all of the cups together
3. Stack the word cards neatly together
4. Place all items back into the science box to keep the activity together
5. The Lego Landforms handout they completed must be inserted into your interactive notebooks

**Lego Landforms**

In the box below, sketch a picture of your team’s landform.

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| --- |
|  |

Describe the landform your team just created. How many Lego blocks high is it? How many colors are in the landform? Does it resemble a shape?

In the box below, sketch a picture of your landform after erosion has occurred.

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| --- |
|  |

How has your team’s original landform changed? What is different about the size

or shape of the landform?

In the box below, sketch a picture of the new landform that was created.

|  |
| --- |
|  |

Describe the new landform that was created. How many Lego blocks high is it?

How many colors are in the new landform? Does it resemble a shape?